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EXAMINER	
BROWN JR, NATHAN H	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/564,632	JOSIFOVSKI, LJUBOMIR	
	Examiner	Art Unit	
	NATHAN H. BROWN JR	2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *(3)* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/10/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Examiner's Detailed Office Action

1. This Office is responsive to application 10/564,632, filed January 13, 2006.

2. Claims 1-62 have been examined.

Claim Rejections - 35 USC § 112, 1st

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-62 are rejected under 35 U.S.C. 112, first paragraph. Specifically, if the application fails as a matter of fact to satisfy 35 U.S.C. § 101, then the application also fails as a matter of law to enable one of ordinary skill in the art to use the invention under 35 U.S.C. § 112.; In re Kirk, 376 F.2d 936, 942, 153 USPQ 48, 53 (CCPA 1967) MPEP 2107.01 (IV).

Claim Rejections - 35 USC § 112, 2nd

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 26 and 27 recite the limitation "node table(s)" in --line 2--. There is insufficient antecedent basis for this limitation in the claim.

7. Claims 58 and 59 recite the limitation "node table(s)" in --line 2--. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 101

8. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful

> improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. Claims 1-27 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter: abstraction and/or algorithm. Independent claim 1 recites a lattice comparison method comprising a number of lattice comparison steps which result in an "accumulative value representing the closeness of the comparison between labels in the first lattice up to the associated first lattice node and labels in the second lattice up to the associated second lattice node". Examiner considers lattices, closeness, nodes, labels, and storage areas to be abstractions commonly used in computational mathematics (applied math). Examiner considers the steps of the method to comprise an algorithm. A method or process claim must recite more than the 101 judicial exceptions of abstraction and algorithm, however claim 1 recites no physical transformation of an article from one state to another, and no tangible result involving real-world entities. Therefore, claim 1 is considered. Claims 2-27 provide detailed algorithmic limitation to claim 1 but do not cure the deficiencies of claim 1. Thus, claims 1-27 are considered non-statutory under 35 U.S.C. 101.

10. Claims 1-27, 32, and 33 are rejected under 35 U.S.C. 101 because the claimed invention recites no practical result. Independent claim 1 recites only the 101 judicial exceptions of abstraction and algorithm and therefore recites no practical result. Claims 32 and 33 tie claim 1 to another statutory class (i.e., a manufacture), however they fail to recite a practical application for such a storage medium or programmable computer device. Therefore, claims 1-27, 32, and 33 are considered non-statutory under 35 U.S.C. 101.

11. Claims 28-30 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter: abstraction and/or algorithm. Independent claim 28 recites a method of searching a database using a plurality of information entries, which have an associated annotation lattice, to identify information to be retrieved from a database. Claim 28 is considered non-statutory under 35 U.S.C. 101 for the same reason as claim 1. Claims 29 and 30 provide further algorithmic limitation to claim 28 but do not cure the deficiencies of claim 28. Thus, claims 28-30 are considered non-statutory under 35 U.S.C. 101.

12. Claims 31, 34-50, 56-59 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter: abstraction and/or algorithm. The apparatus of amended independent claim 31 is considered to be an abstract symbol-manipulating device, like a turing machine (*see* http://en.wikipedia.org/wiki/Turing_machine), configured to carry out the algorithmic steps recited, operating on an mathematical abstraction (lattice). Claims 34-50, 56-59 are considered to provide further algorithmic limitation to claim 31 but not cure the deficiencies of claim 31. Thus, claims 31, 34-50, 56-59 are considered non-statutory under 35 U.S.C. 101.

13. Claims 31 and 34-62 are rejected under 35 U.S.C. 101 because the claimed invention recites no practical result. Amended independent claim 31 is considered to recite only the 101 judicial exceptions of abstraction and algorithm and to therefore recite no practical result. Claims 34-59 tie claim 31 to another statutory class (i.e., a manufacture), however they fail to recite a practical application for such a storage medium or programmable computer device. Therefore, claims 31 and 34-59 are considered non-statutory under 35 U.S.C. 101.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claim 1, 3, 8, 9, 15, 16, 19, 25, 28, 29, 30, 31, 32, 33, 35, 36, 47, 48, 51, 57, 60 and 61 are rejected under 35 U.S.C. 102(b) as being anticipated by *Wang*, "Mandarin spoken document retrieval based on syllable lattice matching", 2000.

Regarding claim 1. (Currently Amended) *Wang* teaches a lattice comparison method (*see* Abstract, *Examiner interprets "matching the whole syllable lattice directly" to be a lattice comparison method.*) comprising:

receiving first and second lattices of labels to be compared (*see* p. 616, §2. Methodology, *Examiner interprets the*

"off-line processing subsystem" to receive the first lattice, the "spoken document...syllable lattice", and "the on-line retrieval subsystem" to receive the second lattice, the "syllable lattice for the speech query".),

each lattice defining alternative label sequences that represent a sequential signal (*see* p. 618, §3.3. Syllable lattice construction, *Examiner interprets "an aligned syllable lattice" to be a lattice defining alternative label sequences that represent a sequential signal.*) and each lattice comprising a plurality of nodes each associated with one or more labels and representing a point in the sequential signal at which the associated label occurs (*see* §4. Retrieving process, p. 619-20, Fig. 2(b), Examiner interprets "$O = (o_1 o_2,...,o_T)$" to be a plurality of nodes each associated with one or more labels and representing a point in the sequential signal at which the associated label occurs.) and

comparing the first lattice with the second lattice by propagating a plurality of paths, each path representing a comparison between labels in the first lattice and labels in the second lattice, and each path having an associated accumulative value representing the closeness of the comparison (*see* §4. Retrieving process, p. 620, *Examiner interprets steps of first using the "Viterbi search algorithm to find the best state*

sequence" and then, "based on the best state sequence... identify the matched spoken segments and estimate the similarity measure between a spoken document d and a speech query q" to propagate a plurality of paths where each path represents comparison between labels in the first lattice and labels in the second lattice.);

wherein during the path propagation, said comparing step defines, for each node in the first lattice, a plurality of associated storage areas (*see* §4. Retrieving process, p. 620, *Examiner interprets the array elements* b_j' *and* a_{ij} *as a plurality of associated storage areas.*), each storage area associated with a first lattice node also being associated with a respective node in the second lattice and being operable to store (*see* §4. Retrieving process, p. 618, *Examiner interprets "the retrieving problem is now a pattern matching process of identifying the document d* in the target database* D_l *whose syllable lattice* l_{d^*} *contains* l_q*" to imply an association of (at least the contents of) the storage areas for the first lattice node and the the second lattice node.*), during the path propagation, an accumulative value representing the closeness of the comparison between labels in the first lattice up to the associated first lattice node and labels in the second lattice up to the associated second lattice node (*see* §4. Retrieving process, p. 620, *Examiner interprets "match_score(i)...(7)" to be an*

accumulative value representing the closeness of the comparison between labels in the first lattice up to the associated first lattice node and labels in the second lattice up to the associated second lattice node.);
and wherein said comparing step uses said storage areas during the propagation of said paths (*see* §4. Retrieving process, p. 620, *Examiner notes that "match_score(i)" is a summation over the storage areas of the array elements* b_j*'*.).

Regarding claim 31. (Currently Amended) *Wang* teaches a lattice comparison apparatus (*see* §6.2. Experimental results, p. 623, col. 1, *Examiner interprets the "test platform" to be a lattice comparison apparatus*.) comprising:

a receiver operable to receive first and second lattices of labels to be compared (*see* p. 616, §2. Methodology, *Examiner interprets the "off-line processing subsystem" to be a receiver operable to receive the first lattices, the "spoken document...syllable lattice", and "the on-line retrieval subsystem" to be a receiver operable to receive the second lattices, the "syllable lattice for the speech query"*.), each lattice defining alternative label sequences that represent a sequential signal (*see* p. 618, §3.3. Syllable lattice construction, *Examiner interprets "an aligned syllable lattice"*

to be a lattice defining alternative label sequences that represent a sequential signal.) and each lattice comprising a plurality nodes each associated with one or more labels and representing a point in the sequential signal at which the associated label occurs (*see* §4. Retrieving process, p. 619-20, Fig. 2(b), Examiner interprets "$O = (o_1 o_2, \ldots, o_T)$" to be a plurality of nodes each associated with one or more labels and representing a point in the sequential signal at which the associated label occurs.); and

a comparator operable to compare the first lattice with the second lattice by propagating a plurality of paths, each path representing a comparison between labels in the first lattice and labels in the second lattice, and each path having an associated accumulative value representing the closeness of the comparison (*see* §4. Retrieving process, p. 620, *Examiner interprets the "Viterbi search algorithm and the estimate of the similarity measure between a spoken document d and a speech query q" executing on the "test platform" to comprise a comparator operable to compare the first lattice with the second lattice by propagating a plurality of paths, each path representing a comparison between labels in the first lattice and labels in the second lattice, and each path having an associated accumulative value representing the closeness of the*

comparison.);

wherein during the path propagation, said comparator is operable to define, for each node in the first lattice, a plurality of associated storage areas (*see* §4. Retrieving process, p. 620, *Examiner interprets the array elements* b_j*' and* a_{ij} *as a plurality of associated storage areas*.), each storage area associated with a first lattice node also being associated with a respective node in the second lattice and being operable to store (*see* §4. Retrieving process, p. 618, *Examiner interprets "the retrieving problem is now a pattern matching process of identifying the document d* in the target database* D_l *whose syllable lattice* l_{d*} *contains* l_q*" to imply an association of (at least the contents of) the storage areas for the first lattice node and the second lattice node*.), during the path propagation, an accumulative value representing the closeness of the comparison between labels in the first lattice up to the associated first lattice node and labels in the second lattice up to the associated second lattice node (*see* §4. Retrieving process, p. 620, *Examiner interprets "match_score(i)...(7)" to be an accumulative value representing the closeness of the comparison between labels in the first lattice up to the associated first lattice node and labels in the second lattice up to the associated second lattice node*.); and

wherein said comparator is operable to use said storage areas during the propagation of said paths (*see* §4. Retrieving process, p. 620, *Examiner notes that "match_score(i)" is an element of an array operable to use as said storage areas during the propagation of said paths to sum over the storage areas of the array elements* b_j*'*.).

Regarding claim 3. (Original) *Wang* teaches a method according to claim 1 or 2, wherein said comparing step propagates said paths by processing the nodes within the said first lattice in sequential order (*see* §4. Retrieving process, p. 620, *Examiner interprets steps of first using the "Viterbi search algorithm to find the best state sequence" and then, "based on the best state sequence... identify the matched spoken segments and estimate the similarity measure between a spoken document d and a speech query q" to propagate said paths by processing the nodes within the said first lattice in sequential order*.).

Regarding claim 8. (Currently Amended) *Wang* teaches a method according to claim 4, wherein said comparing step updates the accumulative values stored in the storage areas associated with the source node to take into account the insertion of labels in

the first lattice and/or in the second lattice (*see* p. 619, col. 2, *Examiner interprets the fact that the "key-phrase state is allowed to jump to the key-phrase state after next in a single step" to take into account the insertion of labels in the first lattice and/or in the second lattice wherein said comparing step updates the accumulative values stored in the storage areas associated with the source node*.).

Regarding claim 9. (Currently Amended) *Wang* teaches a method according to any claim 4, wherein said comparing step updates the accumulative value stored in the storage areas associated with the source node to take into account the deletion of labels from the first lattice and/or from the second lattice (*see* p. 619, col. 2, *Examiner interprets the fact that the "key-phrase state is allowed to jump to the key-phrase state after next in a single step"* to take into account the deletion of labels from the first lattice and/or from the second lattice *wherein said comparing step updates the accumulative values stored in the storage areas associated with the source node*.).

Regarding claims 15 and 47. (Currently Amended) *Wang* teaches a method according to claim 1 and an apparatus according to claim 31, wherein said first and second signals are representative of

time sequential signals (*see* §3.1. Signal processing, pp. 616-17).

Regarding claims 16 and 48. (Original) *Wang* teaches a method according to claim 15 and an apparatus according to claim 47, wherein said nodes within the said first and second lattices represent the start and/or end time of a label within the lattice (*see* p. 618, §3.3. Syllable lattice construction, *Examiner interprets "syllable boundaries" to be the start and/or end time of a label within the lattice.*).

Regarding claims 19 and 51. (Currently Amended) *Wang* teaches a method according to claim 1 and an apparatus according to claim 36, further comprising the step of processing the accumulative values stored for a node, to determine a similarity measure representing the similarity between the first and second lattices (*see* p. 620, col. 2, *Examiner interprets computing match_score(i) for the ith matched spoken segment (equation (7)) to comprise processing the accumulative values,* $b'_{q^*i}(o_t)$*, stored for a node, to determine a similarity measure representing the similarity between the first and second lattices.*).

Regarding claims 25 and 57. (Currently Amended) *Wang* teaches a method according to claim 1 and an apparatus according to claim 31, wherein said comparing step performs a dynamic programming alignment and comparison between the first and second lattices (see p. 618, col. 1, §3.3. Syllable lattice construction, "after the two-pass speech recognition process is complete, an aligned syllable lattice can, thus, be constructed.").

Regarding claim 28. (Currently Amended) *Wang* teaches a method of searching a database (*see* §4. Retrieving process, pp. 618-620, *Examiner interprets "Viterbi search algorithm" to be a method of searching the "syllable lattice database* D_1*".*) comprising a plurality of information entries to identify information to be retrieved therefrom (*see* Abstract, *Examiner interprets "Mandarin spoken documents" to be a plurality of information entries to identify information to be retrieved therefrom.*), each of said plurality of information entries having an associated annotation lattice (*see* §4. Retrieving process, p. 618, *Examiner interprets the syllable lattices* l_{d^*} *contained in the target database* D_1 *to be associated annotation lattices.*), the method comprising:

receiving a query lattice representing an input query (*see* p. 616, §2. Methodology, *Examiner interprets "the on-line*

retrieval subsystem" to receive a query lattice representing an input query, the "syllable lattice for the speech query".); comparing the query lattice with each annotation lattice using the method of claim 1 to provide a set of comparison results (*see* §4. Retrieving process, p. 620, *Examiner interprets steps of first using the "Viterbi search algorithm to find the best state sequence" and then, "based on the best state sequence... identify the matched spoken segments and estimate the similarity measure between a spoken document d and a speech query q" to compare the query lattice with each annotation lattice using the method of claim 1 to provide a set of comparison results.*); and

identifying said information to be retrieved from said database using the set of comparison results (*see* §4. Retrieving process, p. 620, *Examiner interprets steps of first using the "Viterbi search algorithm to find the best state sequence" and then, "based on the best state sequence... identify the matched spoken segments and estimate the similarity measure between a spoken document d and a speech query q" to identifying said information to be retrieved from said database using the set of comparison results.*).

Regarding claims 29 and 61. (Original) *Wang* teaches a method according to claim 28 and an apparatus according to claim 60,

wherein said identifying step identifies the information to be retrieved from said database by identifying the annotation lattice most similar to the query lattice (*see* §4. Retrieving process, p. 618, *Examiner interprets the syllable lattices* l_{d^*} *contained in the target database* D_1 *to be associated annotation lattices*.).

Regarding claim 30. (Original) *Wang* teaches a method according to claim 28 or 29, wherein said identifying step identifies the N most relevant information entries by identifying those information entries having an annotation lattice most similar to the query lattice (*see* p. 620, col. 2, "As a result, the documents with higher Sim(d,q) will be selected and ranked as the retrieval results.").

Regarding claim 32. (Currently Amended) *Wang* teaches a computer readable medium storing computer executable instructions for causing a programmable computer device to carry out the method of claim 1 (*see* p. 623, *Examiner interprets a "Pentium III PC" to comprise a computer readable medium storing computer executable instructions for causing a programmable computer device to carry out the method of claim 1*.).

Regarding claim 36. (New) *Wang* teaches an apparatus according to claim 31, wherein when propagating a path from a source node in said first lattice to a destination node in said first lattice, said comparator is operable to update and to propagate accumulative values stored in the storage areas associated with the source node to at least the storage areas associated with the destination node (*see* p. 620, col. 1, Examiner interprets $\delta_T(i)$ to be the storage area (for the best score) of the destination node associated with the storage area of the source node $\delta_1(i)$.).

Regarding claim 33. (Currently Amended) *Wang* teaches computer executable instructions for causing a programmable computer device to carry out the method of claim 1 (*see* §6.2. Experimental results, pp. 621-, Examiner interprets "experiment" to comprise computer executable instructions for causing a programmable computer device to carry out the method of claim 1.).

Regarding claim 35. (New) *Wang* teaches an apparatus according to claim 31, wherein said comparator is operable to propagate said paths by processing the nodes within the said first lattice in

sequential order (*see* §4. Retrieving process, p. 620, *Examiner interprets the "Viterbi search algorithm" operable to propagate said paths by processing the nodes within the said first lattice in sequential order.*).

Regarding claim 60. (New) *Wang* teaches an apparatus for searching a database (*see* §6.2. Experimental results, p. 623, col. 1, *Examiner interprets the "test platform" to be an apparatus for searching a database.*) comprising a plurality of information entries to identify information to be retrieved therefrom (*see* §6.2. Experimental results, p. 623, *Examiner interprets "a database consisting of 500 documents" to comprise "Mandarin spoken documents" to be a plurality of information entries to identify information to be retrieved therefrom.*), each of said plurality of information entries having an associated annotation lattice (*see* §4. Retrieving process, p. 618, *Examiner interprets the syllable lattices* l_{d^*} *contained in the target database* D_l *to be associated annotation lattices.*), the apparatus comprising:

a receiver operable to receive a query lattice representing an input query (*see* p. 616, §2. Methodology, *Examiner interprets the "the on-line retrieval subsystem" to be a receiver operable to receive a query lattice representing an input query, the*

"syllable lattice for the speech query".);

a lattice comparison apparatus according to claim 31 for comparing the query lattice with each annotation lattice to provide a set of comparison results (*see* §4. Retrieving process, p. 620, *Examiner interprets the "Viterbi search algorithm and the estimate of the similarity measure between a spoken document d and a speech query q" executing on the "test platform" to comprise a lattice comparison apparatus according to claim 31 for comparing the query lattice with each annotation lattice to provide a set of comparison results.*);

and

an identifier operable to identify said information to be retrieved from said database using the set of comparison results provided by the lattice comparison apparatus (*see* §4. Retrieving process, p. 620, *Examiner interprets steps of first using the "Viterbi search algorithm to find the best state sequence" and then, "based on the best state sequence... identify the matched spoken segments and estimate the similarity measure between a spoken document d and a speech query q" executing on the "test platform" to be an identifier operable to identify said information to be retrieved from said database using the set of comparison results provided by the lattice comparison apparatus.*).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. Claims 2, 24, 34, 40, 41, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Wang* in view of *James et al.* (*James*), "A FAST LATTICE-BASED APPROACH TO VOCABULARY INDEPENDENT WORDSPOTTING", 1994.

Regarding claims 2 and 34. (Original) *Wang* teaches a method according to claim 1 and an apparatus according to claim 31. Wang does not teach each lattice comprises an acyclic directed graph representing different label sequences that represent said sequential signal. *James* does teach each lattice comprises an acyclic directed graph representing different label sequences that represent said sequential signal (*see* p. I-378, §2.

OVERVIEW OF LATTICE GENERATION AND KEYW0RD MATCHING). It would have been obvious at the time the invention was made to persons having ordinary skill in the art to combine *Wang* with *James* to obtain very much faster, yet acceptable, performance compared to conventional systems which depend on keyword-specific training or prior knowledge of the test set vocabulary.

Regarding claims 24 and 56. (Currently Amended) *Wang* teaches a method according to claim 19 and an apparatus according to claim 51. Wang does not teach said processing step processes the accumulative values associated with an end node of the first lattice (see p. I-378). However, James does teach said processing step processes the accumulative values associated with an end node of the first lattice (see p. I-378, §3. OVERVIEW OF LATTICE GENERATION AND KEYW0R.D MATCHING, col. 1, Examiner interprets "the identities of the, top N phones ending at that frame" to be accumulative values associated with an end node of the first lattice.). It would have been obvious at the time the invention was made to persons having ordinary skill in the art to combine *Wang* with *James* to obtain very much faster, yet acceptable, performance compared to conventional systems

which depend on keyword-specific training or prior knowledge of the test set vocabulary.

Regarding claim 40. (New) *Wang* teaches an apparatus according to claim 36. *Wang* does not teach said comparator is operable to update the accumulative values stored in the storage areas associated with the source node to take into account the insertion of labels in the first lattice and/or in the second lattice. *James* does teach said comparator is operable to update the accumulative values stored in the storage areas associated with the source node to take into account the insertion of labels in the first lattice and/or in the second lattice (see p. I-378, "Phones may be inserted, deleted or suhstituted to obtain a valid path for the keyword through the lattice."). It would have been obvious at the time the invention was made to persons having ordinary skill in the art to combine *Wang* with *James* to obtain very much faster, yet acceptable, performance compared to conventional systems which depend on keyword-specific training or prior knowledge of the test set vocabulary.

Regarding claim 41. (New) *Wang* teaches an apparatus according to claim 36. Wang does not teach said comparator is operable to

update the accumulative value stored in the storage areas associated with the source node to take into account the deletion of labels from the first lattice and/or from the second lattice. *James* does teach said comparator is operable to update the accumulative value stored in the storage areas associated with the source node to take into account the deletion of labels from the first lattice and/or from the second lattice (see p. I-378, "Phones may be inserted, deleted or suhstituted to obtain a valid path for the keyword through the lattice."). It would have been obvious at the time the invention was made to persons having ordinary skill in the art to combine *Wang* with *James* to obtain very much faster, yet acceptable, performance compared to conventional systems which depend on keyword-specific training or prior knowledge of the test set vocabulary.

18. Claims 17, 18, 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Wang* in view of *Ng et al.* (*Ng*), "PHONETIC RECOGNITION FOR SPOKEN DOCUMENT RETRIEVAL", 1998.

Regarding claims 17 and 49. (Original) *Wang* teaches a method according to claim 15 or 16 and an apparatus according to claim 47. *Wang* does not teach said lattices are representative of speech and wherein said labels are representative of sub-word units. *Ng* does teach said lattices are representative of speech and wherein said labels are representative of sub-word units (*see* §2. SUBWORD UNIT REPRESENTATIONS). It would have been obvious at the time the invention was made to persons having ordinary skill in the art to combine *Wang* with *Ng* to constrain the size of the vocabulary needed to cover the language and the use of subword allow for the detection of new user-specified query terms during retrieval.

Regarding claims 18 and 50. (Original) *Wang* teaches a method according to claim 17 and an apparatus according to claim 39. Wang does not teach said sub-word units comprise phonemes. However, Ng does teach wherein said sub-word units comprise phonemes (*see* §2. SUBWORD UNIT REPRESENTATIONS). It would have been obvious at the time the invention was made to persons having ordinary skill in the art to combine *Wang* with *Ng* to constrain the size of the vocabulary needed to cover the

language and the use of subword allow for the detection of new user-specified query terms during retrieval.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan H. Brown, Jr. whose telephone number is 571-272- 8632. The examiner can normally be reached on M-F 0830-1700. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Vincent can be reached on 571-272-3080. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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September 3, 2008

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